Importance of Hearing to the War Fighter

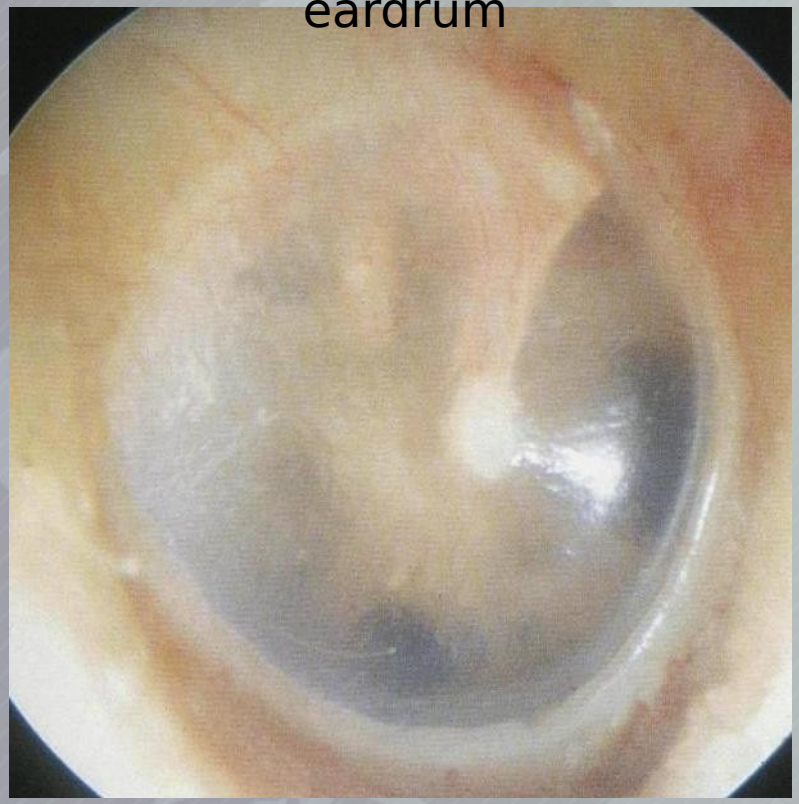
Some Facts……

- Hazardous noise exposure currently greatest in > 30 yr
- 1 in 3 post-deploying OIF soldiers report exposures to a acoustic trauma
- 1 in 4 post-deploying OIF soldiers report hearing loss ar hearing complaints (e.g. tinnitus)
- 7 of every 10 WIA evacuations are blast-related injuries (i.e., related hearing/balance problems due to tympanic membrane perforations, hearing loss)

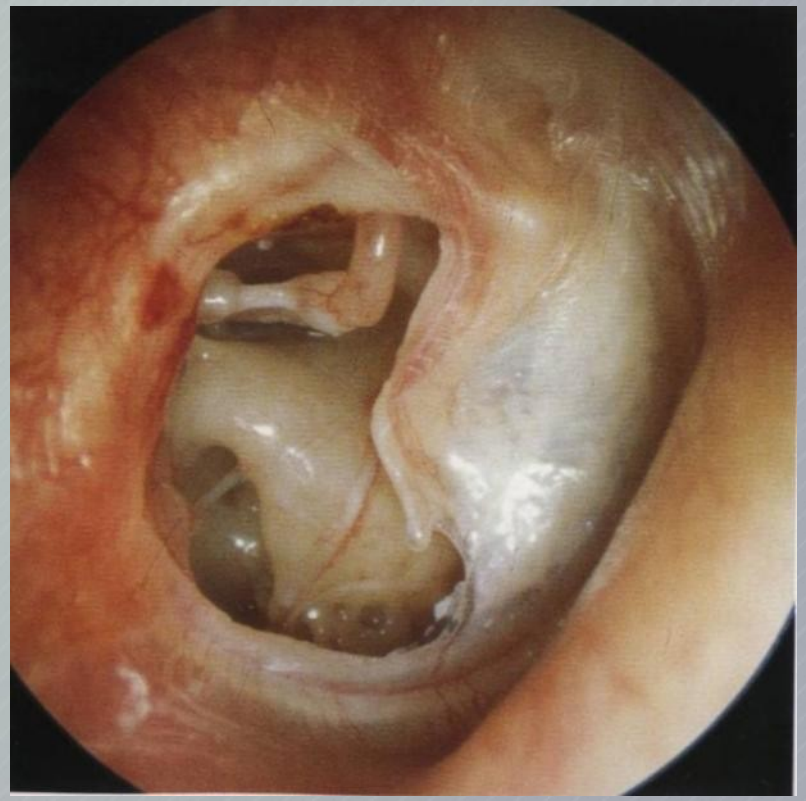
FY2005 – Tinnitus #1 and Hearing Impairment #2 di

Sudden Impulse Noise from weapons fire can cause acute rupture of the eardrum and hearing loss in soldiers who do not use hearing protection (earplugs).

Normal, healthy, intact eardrum



Perforated eardrum



Why Soldiers Need Good Hearing….

- Hearing is perhaps the Soldier's most sophisticated sensor
- We can HEAR the enemy long before we see the enemy!
  - 24/7 sense
  - Darkness
- Our ability to effectively communicate makes us lethal

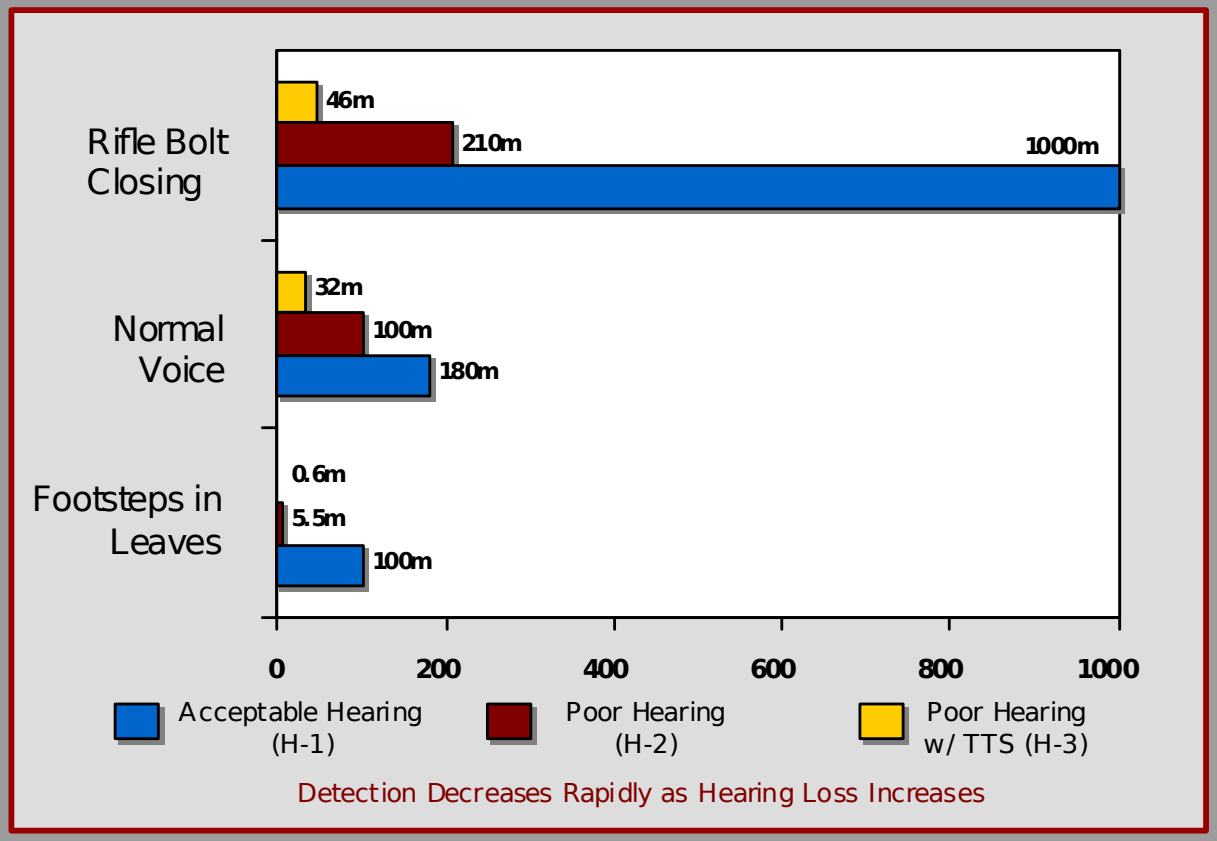
Survivability and Lethality

- **If we cannot shoot, move and COMMUNICATE, then our effectiveness as an army is degraded!**

- **Communicating effectively with squad members during patrol or with higher headquarters by radio can make the difference between battles won and battles lost**

Hearing is a COMBAT MULTIPLIER.....

DETECTION OF SOUND BY HEARING ABILITY



WHAT IS HAZARDOUS NOISE?

At **85 dBA**, more than 8hrs exposure may result in permanent NIHL

At **140dBP** hazardous for impulse/impact noises

Steady State Noise:

Exposure to > 85 dBA steady state noise over an 8 hour period may result in a permanent hearing loss!

Here are some examples of Steady State Noise:

M966, M996, M997, M998, M1037, and other non-heavy high mobility multi-wheeled vehicle (HMMWV), at 2/3 payload →

78 dBA when idle

84 dBA when moving at 30 mph

94 dBA when moving at 55 mph

M1A2 Abrams Tank: 93 dBA when idle

108 dB when moving at 10 mph

UH-60A BlackHawk Helicopter: 106 dBA all the time!

Three Foot Rule

If the sound is so loud

that you must raise your voice to be understood
at a distance of three feet

How Much Steady State Noise is Too Much?

- **>**85 dBA **for 8 hrs (TWA) = hazardous**
- **Every additional** 3 **dB cuts maximum exposure** time without earplugs **in half:**
  - 85 dB = 8 Hr
  - 88 dB = 4 Hr
  - 91 dB = 2 Hr
  - 94 dB = 1 Hr
  - 97 dB = 30 min
  - 100 dB = 15 min

For Example: M2A2 Bradley Fighting Vehicle creates 110 dB of steady state noise inside the vehicle when moving at 10 mph. At that speed, how long can you stay inside without hearing protection (ear plugs or CVC) before you start to get a hearing loss?

Answer: Less than 2 minutes!

Examples of Impulse Noise

M16, blanks with suppressor
147dB
M16, live rounds
156dB
Shotgun 12 gauge
160dB
M-60 Machine Gun
165dB
JAVLIN
172dB
81 mm Mortar (Charge 4)
179dB

How Can You Prevent Hearing Loss?

(1) ANNUAL HEARING MONITORING

- **AR 40-501:** All noise exposed personnel **must have an annual hearing test.**
- **Army G-1 Personnel Policy Guidance: All** deploying soldiers **are required to have a DD Form 2215 Reference Audiogram or DD2216 Periodic Audiogram (***within the last 12 months***) in their medical record.**

Regular hearing testing is often the only way to know what your soldiers can or cannot hear!

Hearing Readiness is a MEDPROS/AKO Requirement:

- Hearing is another Individual Medical Readiness Indicator being tracked on MEDPROS

- Soldier not tested within past 12 months will be **RED** and maintain a **NO GO** status

- Soldier's who have significant threshold shifts or profiles MUST be followed-up or they will remain **AMBER**, still a **NO GO** status

How Can You Prevent Hearing Loss?

(2) WEAR HEARING PROTECTION AROUND HAZARDOUS NOISE

- **Annual Unit Testing and earplug fitting is done at the Soldier Readiness Center, 1042 O'Connell Drive, 3rd Floor.**
- **Call Mr. Ron Magalong at 526-6976 to schedule an appt for your soldiers.**
- **Army G-1 Personnel Policy Guidance**

7-10. Personnel Protective Equipment & Medications

a. PPE/CTA 8-100 Items:

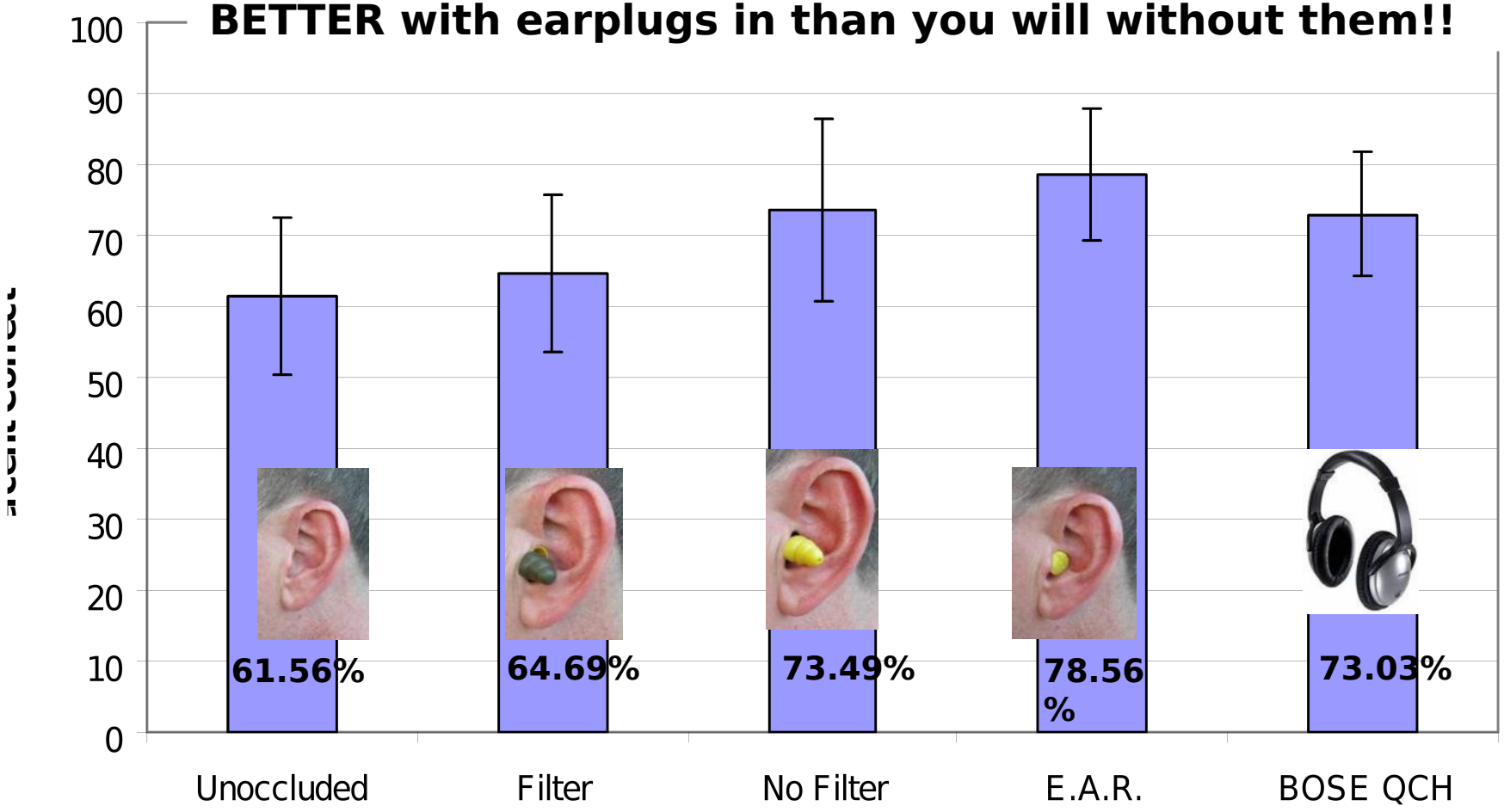
All deploying personnel should have Hearing Protection Devices: Options include the following: Double-sided combat arms earplug (NSN 6515-01-466-2710; single-sided non-linear version (NSN 6515-01-512-6072); and/or, the quad-flange earplug (NSN 6515-01-492-0443). Earplug carrying case (NSN 6515-01-100-1674) may be used with the combat arms earplug. Ordering information for the

Initial contact with the enemy is usually auditory in nature. Many soldiers believe that earplugs are counter-indicated, and will decrease their ability to hear weak speech signals in a combat situation, and decrease their situational awareness.

This assumption is INCORRECT!

Speech Discrimination Scores (% correct) using the Hearing In Noise Test (HINT) in listeners with normal hearing under five different earplug conditions.

**** Results show that in loud background noise, speech understanding improves with earplugs in → If you have normal hearing, you will understand speech BETTER with earplugs in than you will without them!!**



There are MANY different earplugs authorized for use on DoD installations. Earplugs are broadly categorized as either Pre-Formed (silicone) or Hand-Formed (foam).

Pre-Formed earplugs must be fitted by trained medical personnel. Fittings are performed on a walk-in basis at the SRP Hearing Clinic, Room 315 M-F 0730-1630, Building 1042 O'Connell Drive.

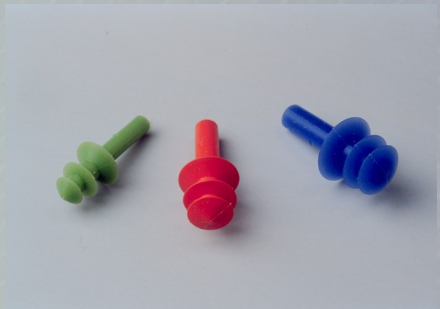
DA PAM 40-501
1-4. i.
Unit Commanders of noise-exposed personnel must appoint a Unit Hearing Conservation Officer to …
(1)(b) Requisition and ensure an adequate supply of hand formed (foam) earplugs.
(8) Ensure that all soldiers and noise-exposed civilians under their supervision retain a pair of pre-formed (silicone) earplugs and an earplug carrying case as an item of individual equipment.

DA PAM 40-501
1-4. g.(2) Preformed earplugs must be properly fitted by trained medical personnel.
Army G-1 Personnel Policy Guidance
7-10. Personnel Protective Equipment & Medications
a. PPE/CTA 8-100 Items:
All deploying personnel should have Pre-Formed

Authorized PRE-FORMED Earplugs (must be fitted by qualified medical personnel prior to use)

Single flange, 5 sizes small to large

Combat Arms Earplug size medium only



Triple flange, small, medium, large

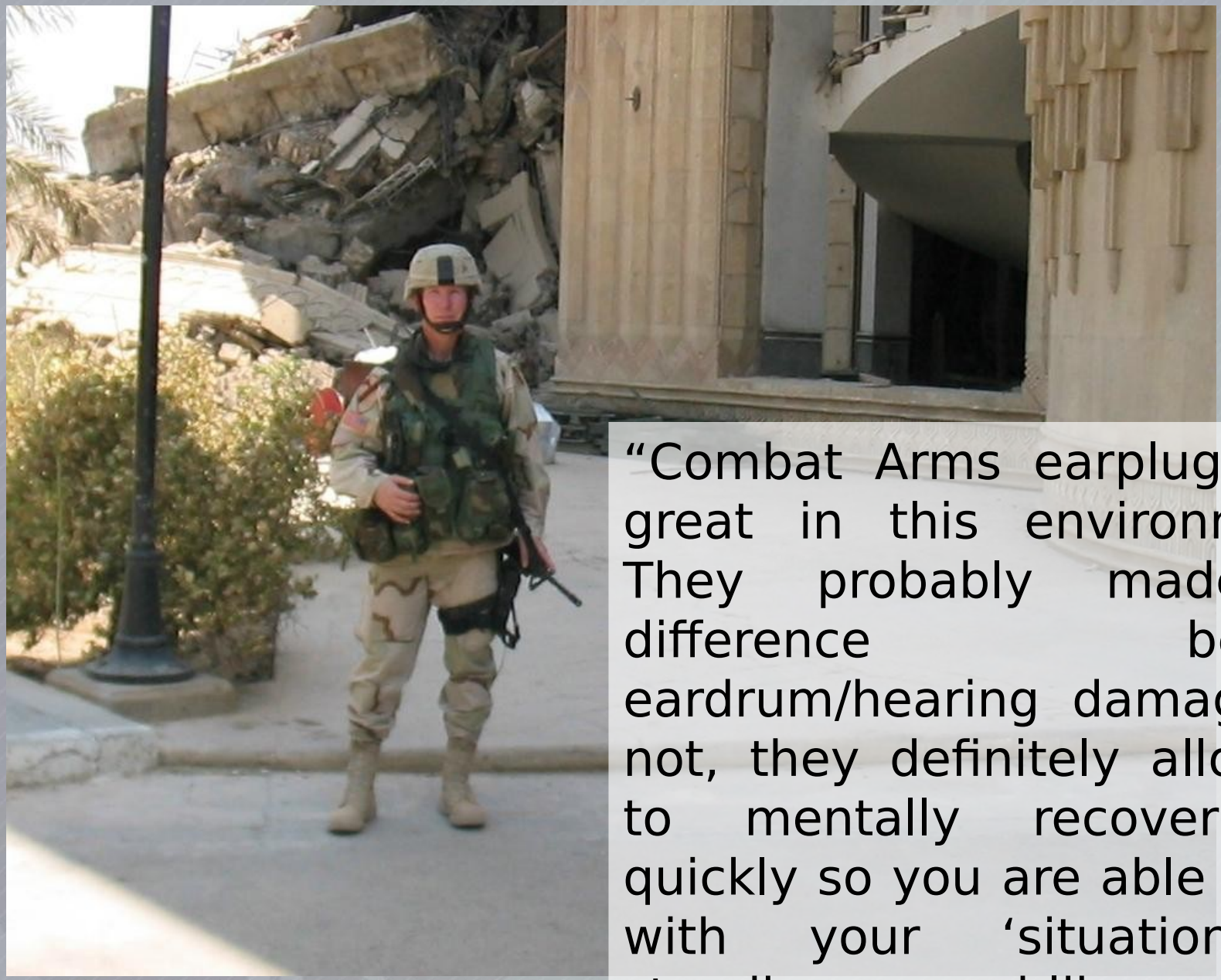
Custom Earplugs for very small or very large ear canals

Single side Combat Arms Earplug size medium only

Elvex Quattro size medium only

* 3 sizes (small, medium, large)

* Corded



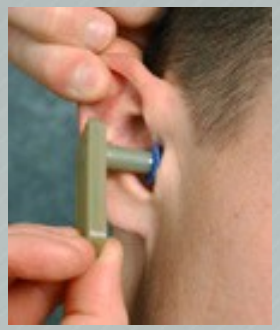
“Combat Arms earplugs work great in this environment. They probably made the difference between eardrum/hearing damage and not, they definitely allow you to mentally recover very quickly so you are able to deal with your ‘situation’ vs. standing around like a stunned

Proper Insertion of Triple Flange or Quad Flange Earplugs:

1) Use of the seating device is optional, but recommended.

Place earplug stem in seating device.

2) Reach over the head with the opposite hand and pull the ear outward to make the ear canal more accessible. Notice this maneuver is not always necessary with the earplug seating device.



3) Insert plug into ear canal.

Gently push and twist earplug toward the rear center of head.

4) The third flange should be **flush with the opening of the ear canal. Tension should be felt when lightly pulling on the stem of the earplug.**

When both earplugs are inserted, sounds are muffled and

5) Improperly fit triple-flange earplug!!

There are only two DoD Authorized HAND-FORMED (foam) Earplugs (Sound Guard and SuperFit). They do not need to be fitted by medical personnel, however, all three sizes should be available to soldiers as "backup".

Sound Guard Earplugs (size medium only)
NSN 6515-00-137-6345 $29.58 for 200 pair

SuperFit 30 Aearo#310-1009
(size small for small ear canals)
www.GSAAdvantage.gov
$25.00 for 200 pair.

SuperFit 33 Aearo#310-1008
(size large for large ear canals)
www.GSAAdvantage.gov
$27.00 for 200 pair.

IMPORTANT NOTE! **Under the provisions of the Javits-Wagner-O'Day Act, the Sound Guard foam earplug has been substituted for the Aearo Classic foam plug as a set aside item for the Blind and Disabled Industries. If government personnel purchase polyvinyl foam earplugs, they must use the Defense Logistics Agency and National Stock Number 6515-00-137-6345. Even if a higher quality foam plug with a fitting ring is available directly from Aearo at less cost, we must use this government source.**

The SuperFit 30 (small) and SuperFit 33 (large) can still be purchased to accommodate the extreme ends of the fitting distribution provided that the Sound Guard is used for the majority of users. This policy is consistent with federal and DOD regulations that permit a freedom of choice from among approved hearing protectors unless medically or environmentally contraindicated.

NOT AUTHORIZED!

Proper Insertion of Hand-Formed (Foam) Earplugs:

1) Roll the earplug into a thin tightly compressed cylinder.

2) Place the earplug into the ear canal. Pulling back on the pinna with the opposite hand is not necessary but helps to straighten the ear canal making insertion easier.

Good Fit!

3) Gently hold finger over the earplug allowing it to expand in the ear canal.

All earplugs work lose and must be reseated after a period of time. When this occurs with the hand formed earplug the earplug must be removed from the ear and reseated.

Improper Fit!

As the name implies, these earplugs are formed by the hand and inserted into ear canal. They are bi-colored to help supervisors monitor the correct fit by noise-exposed personnel: If the second color can be seen when the earplug is in the ear, it does not fit correctly. An alternate size should be used.

Note when using the SoundGuard (orange and green) foam earplug, only then GREEN end should be visible outside the ear canal. The ORANGE end should be completely inserted in the ear canal. If any orange is visible, the earplug is either not inserted far enough, or it is too big.

Because they are formed by the hand they are not recommended for personnel who must remove and insert their earplugs many times during the day and whose hands come in contact with dirt or chemicals that could be transferred to the ear from the hand via the insertion of the earplug.

Communication Ear Plugs for Aviator Helmets:

The Communications Earplug (CEP) is used in conjunction with the aviator helmet. Research is being conducted to determine if it can be used with tank crew helmets. The earplug provides hearing protection as well as enhanced communication. Because the communication signal is presented through the earplug, users report that less volume is required to hear radio communication.

The Bottom Line:
If you do not use hearing protection around hazardous noise, you will lose your hearing.

The great majority of hearing loss incurred by soldiers is incurred in a garrison or training environment. It *can and should* be prevented.

Noise Induced Hearing Loss represents a significant negative personal, financial, and mission impact for individual soldiers and

QUESTIONS???

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